

# MUNDELL & ASSOCIATES, INC.

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429 East Vermont Street, Suite 200, Indianapolis, Indiana 46202-3688

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January 18, 2002

## PRIVILEGED AND CONFIDENTIAL

Mr. Daniel P. McNerny, Esq.  
Bose McKinney & Evans  
2700 First Indiana Plaza  
135 North Pennsylvania Street  
Indianapolis, Indiana 46204

RE: Air Quality Monitoring Results  
**Michigan Meadows Apartments**  
3800 West Michigan Street  
Indianapolis, Indiana  
Mundell Project No. M01046

Dear Mr. McNerny:

MUNDELL & ASSOCIATES, INC. (MUNDELL) is pleased to submit to Bose McKinney & Evans (BM&E) this letter report summarizing the air quality monitoring performed at the above-referenced property (Site) in accordance with MUNDELL Proposal No. P01039c dated October 25, 2001. The following summarizes scope of services and the results of the sampling.

### **INTRODUCTION**

A company named BHT, the previous owners of the former Allison facility located due north of the Michigan Meadows Apartments across Little Eagle Creek, utilized trichloroethylene (TCE) as a parts degreaser in their parts rebuilding operations from the 1950s to the 1970s. Recent investigations by Keramida Environmental (Keramida) of that facility as part of an Indiana Department of Environmental Management (IDEM) Voluntary Remediation Program (VRP) investigation has disclosed volatile organic chemical impacts to groundwater from these former operations. Groundwater sampling indicated these impacts have apparently moved offsite and to the south beneath the Michigan Meadows Apartments. The Michigan Meadows Apartments consists of 23 multi-story apartment and support buildings on approximately 13.7 acres (see Figure 1).

A possible concern has been raised that some or all of these volatile organic chemicals may find their way into the utility or living spaces of the apartment buildings located above the contaminated groundwater plume. Therefore, this evaluation was designed to detect potential impacts to indoor air quality at the Meadows Apartments that could cause a human-health concern to the current residents.

### **AIR QUALITY SAMPLING**

Air quality samples were collected from five Michigan Meadows Apartments buildings (Bldg Nos.

15, 16, 17, 19 and 20) located in the northwestern portion of the site nearest the former Allison facility over the most severely impacted portion of the groundwater plume. The VRP study conducted by Keramida indicated significant levels of four chemicals of concern (COCs) in the shallow groundwater beneath this area of the property: trichloroethene (TCE), tetrachloroethene (PCE), cis-1,2-dichloroethene (cis-1,2-DCE) and vinyl chloride. Three air samples were collected from the laundry rooms in the basements of the buildings (Bldg Nos. 15, 19 and 20) and two samples were collected within available basement apartments (Apts. 1601 and 1702). Each of the air quality samples consisted of a total volume of 400 milliliters of air collected over a period of 24 hours.

On December 10, 2001 a six-liter, evacuated, stainless steel Summa Canister was placed at each location between 9 and 10 a.m. by Ms. Elizabeth Chaffee, E.I.T., of MUNDELL and Mr. Dick Griffith, C.I.H., of Workplace Safety & Health Company. Each canister was equipped with a passive flow controller set to fill the canister over a 24-hour period. The air slowly filled the evacuated canister through a precision sapphire orifice, which was preset by DataChem Laboratories in Salt Lake City, Utah. After 24 hours, Ms. Chaffee and Mr. Griffith returned to the Site to close the canisters and remove the sampler. The canisters were then shipped back to DataChem for analysis. The air quality samples were analyzed by gas chromatograph (GC/MS) for TCE, PCE, cis-1,2-DCE, and vinyl chloride utilizing a modified U.S. EPA Method T015 for single ion monitoring (SIM). SIM allows detection of very low (sub-part per billion) concentrations of target analytes.

It should be noted that standard industrial hygiene style air monitoring, using sorbent tube sampling media yields results at the part per million (ppm) level. Due to the desire to compare the final results to risk-based concentrations, an unreasonable sampling duration would have been required to achieve the desired detection limit using this methodology. Therefore, it was deemed inappropriate for the monitoring program completed for this study.

### ***QUALITY CONTROL***

To provide added assurance regarding the quantitative accuracy of the analytical results, a surrogate spike of 500 parts per trillion (ppt) of 4-Bromofluorobenzene was added by DataChem to each of the five samples prior to analysis for completion of a surrogate recovery determination. This compound was chosen since its chromatographic peak does not interfere with the target compounds and is unlikely to be present at the Site. The average percent recovery of 4-Bromofluorobenzene in the five samples was 97.4 percent. This is well within the acceptable range for this method (*e.g.*, 80 to 120 percent) and indicates that the percent recovery of the target compounds is likely in the same range.

A laboratory blank was created and analyzed for not only the four constituents, but also eight additional compounds. The results indicate no detectable concentrations of any of the 12 compounds in the analysis of the blank. This indicates that the lab is not introducing artifacts into the field or blank samples from background concentrations of chemicals used elsewhere in the lab. A quality control (QC) sample was also created by spiking approximately 200 parts per trillion (ppt) of cis-1,2-DCE, PCE and vinyl chloride to measure sample recovery. The results were also well within the acceptable quality control range. A quality control duplicate analysis was also performed on the spiked QC sample. Both the QC sample and the QC duplicate sample were spiked with 4-Bromofluorobenzene to verify proper recovery and the results averaged 99.4 percent, or well

within acceptable limits.

### **ANALYTICAL RESULTS**

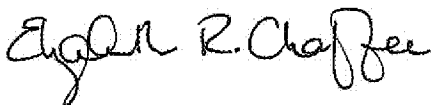
The analytical results of the air quality sampling at the Site are presented in Table 1. Low concentrations of TCE, PCE, cis-1,2-DCE and vinyl chloride were detected in selected air quality samples collected for this study. As a means of comparison for the analytical results, MUNDELL referred to risk-based methods utilized by federal regulatory agencies to develop life-time and site-specific inhalation and exposure concentrations for the constituents of concern (Table 2). Reference information for the development of Table 2 is presented as an attachment to this report. Three air samples indicated airborne concentrations slightly above the calculated life-time risk-based concentrations for TCE: Building 15 and 20 laundry rooms, and Apartment 1702. None of the other chemicals were found above life-time risk-based concentrations. However, no chemicals exceeded the calculated site-specific risk-based concentrations.

Based on the consistency of the analytical results and the level of quality of assurance undertaken, MUNDELL believes these sample results accurately reflect the airborne concentrations of the four COCs on the day of the monitoring. At part per trillion concentrations, many factors can influence the difference in concentrations between buildings: concentrations of COCs in the subsurface, porosity of the floor, air currents, temperature, humidity, and building air exchange rates to name a few.

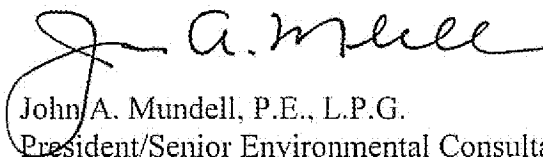
We appreciate the opportunity to provide this letter report to you. If you should have any questions, please do not hesitate to contact me (317-630-9060).

Sincerely,

**MUNDELL & ASSOCIATES, INC.**



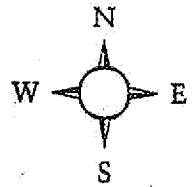
Elizabeth R. Chaffee, E.I.T.  
Project Environmental Engineer



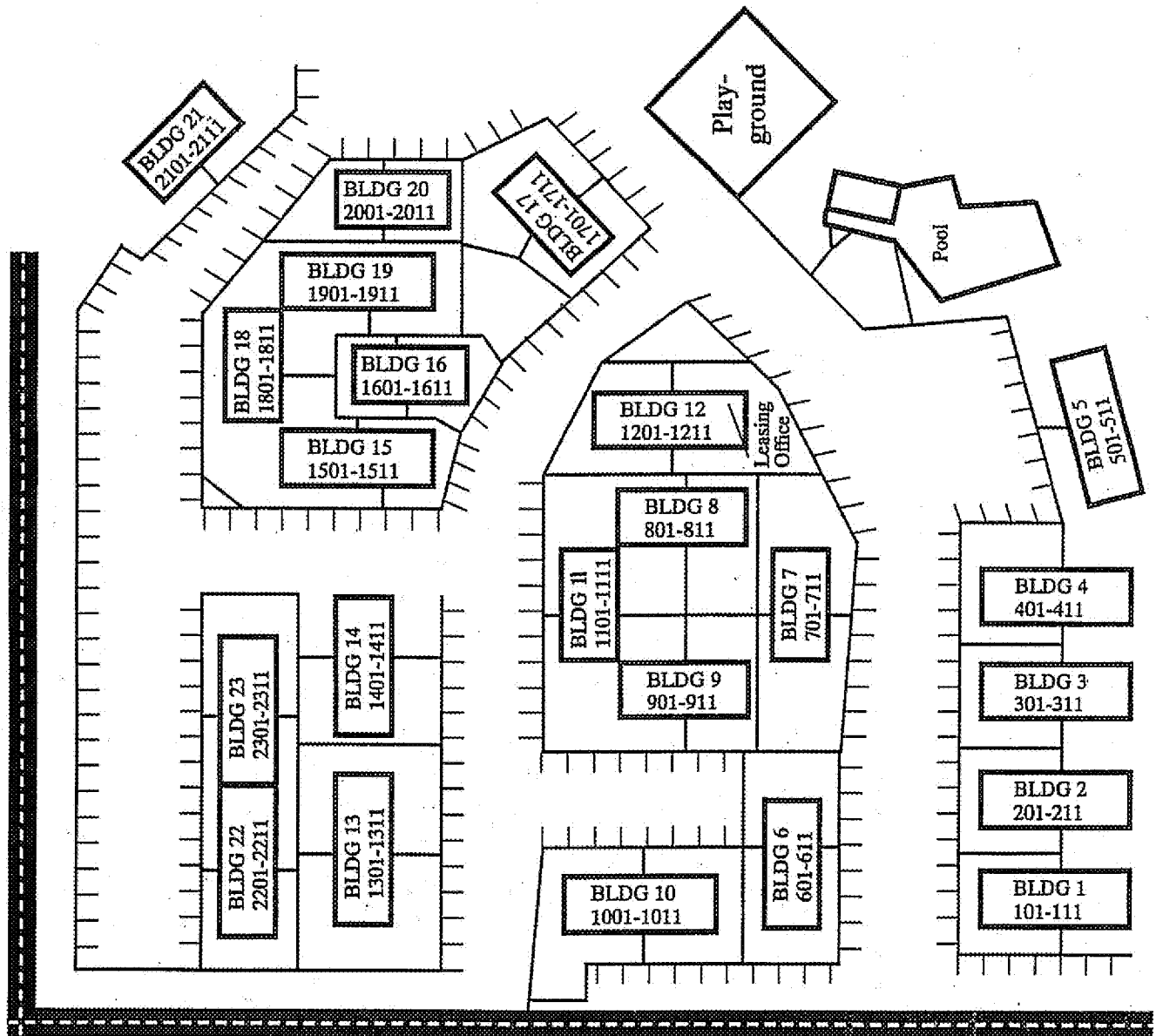
John A. Mundell, P.E., L.P.G.  
President/Senior Environmental Consultant

/erc

Attachments: Figure 1. Michigan Meadows Apartments Site Layout  
Table 1, Inhalation Exposure Parameters and Concentration Limits  
Table 2, Air Quality Analytical Results  
Inhalation Exposure Parameters and Concentration Limits Reference Information  
DataChem Laboratories Analytical Report



**Holt Road**



**West Michigan Street**

**MUNDELL & ASSOCIATES, INC.**

*Consulting Professionals for the Earth & Environment*

429 East Vermont Street, Suite 200  
Indianapolis, Indiana 46202-3688  
317-630-9060, fax 317-630-9065

Project Number:  
M01046  
Drawing File:  
Frame1  
Date Prepared:  
01/10/02  
Scale:  
None

SITE LAYOUT

MICHIGAN MEADOWS APARTMENTS  
INDIANAPOLIS, INDIANA

FIGURE

**1**

**Table 1**  
**Air Quality Analytical Results**  
**Michigan Meadows Apartments**  
**Indianapolis, Indiana**  
**MUNDELL Job No.: M01046**

Sample	Sample Date	Sample Location	cis-1,2-Dichloroethylene (cis-1,2-DCE) ug/m3	Tetrachloroethylene (PCE) ug/m3	Trichloroethylene (TCE) ug/m3	Vinyl Chloride ug/m3
011210-01	12/10/2001	Bldg 20, Laundry Rm	1.51	2.03	1.13	<0.10
011210-02	12/10/2001	Bldg 19, Laundry Rm	1.11	1.76	0.86	0.033
011210-03	12/10/2001	Bldg 16, Apt 1601	1.19	1.83	1.07	0.042
011210-04	12/10/2001	Bldg 15, Laundry Rm	1.39	2.85	1.24	0.042
011210-05	12/10/2001	Bldg 17, Apt 1702	2.02	2.65	1.72	0.062

Note: Analytical results from the DataChem Laboratories were reported in parts per trillion. To obtain units of micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ), results were converted to parts per billion, multiplied by the molecular weight of the chemical, then divided by 24.45 (a conversion factor).

## **Inhalation Exposure Parameters and Concentration Limits Reference Information**

The following definitions are provided in accordance with Table 2, Inhalation Exposure Parameters and Concentration Limits.

### **Carcinogen Classification**

The Environmental Protection Agency (EPA) uses a weight-of-evidence three-step procedure to classify the likelihood that the chemical causes cancer in humans. In the first step, the evidence is characterized separately for human studies and for animal studies. The human studies are examined for the validity and representativeness of the populations studied, any possible confounding factors, and the statistical significance of the results of the studies. The animal studies are evaluated to decide whether biologically significant responses have occurred and whether the responses are statistically significantly increased in treated versus control animals. Next, the human and animal evidence is combined into an overall classification. This classification is based on an analysis of both the human and animal evidence, considering the number and quality of both types of studies. In the third step, the classification is adjusted upward or downward, based on an analysis of the supporting evidence. Supporting evidence includes structure-activity relationships (i.e., the structural similarity of a chemical to another chemical with known carcinogenic potential), studies on the metabolism and pharmacokinetics of a chemical, and short-term genetic toxicity tests. The result is that each chemical is placed into one of the following five categories:

- Group A--Human carcinogen
- Group B--
  - B1--Probable human carcinogen, limited human data are available
  - B2--Probable human carcinogen, sufficient evidence in animals and inadequate or no evidence in humans
- Group C--Possible human carcinogen
- Group D--Not classifiable as to human carcinogenicity
- Group E--Evidence of non-carcinogenicity for humans

### **Inhalation Reference Dose (RfDi)**

In general, the RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. The RfD is generally expressed in units of milligrams per kilogram of bodyweight per day (mg/kg/day). Dose-response assessment usually entails an extrapolation from the generally high doses administered to experimental animals or exposures noted in epidemiologic studies to the exposure levels expected from human contact with the agent in the environment.

The RfD is useful as a reference point from which to gauge the potential effects of the chemical at other doses. Usually, doses less than the RfD are not likely to be associated with adverse health risks, and are therefore less likely to be of regulatory concern. As the frequency and/or magnitude of the exposures exceeding the RfD increase, the probability of adverse effects in a

human population increases. However, it should not be categorically concluded that all doses below the RfD are "acceptable" (or will be risk-free) and that all doses in excess of the RfD are "unacceptable" (or will result in adverse effects).

### **Cancer Slope Factor – Inhalation**

The slope factor is the cancer risk (proportion affected) per unit of dose. In the IRIS chemical files, the slope factor is expressed on the basis of chemical weight [milligrams of substance per kilogram body weight per day (mg/kg/day)]. The slope factor can be used to compare the relative potency of different chemical substances on the basis either of chemical weight (as above) or moles of chemical (m moles/kg/day). The slope factor can also be defined as an upper bound, approximating a 95% confidence limit, on the increased cancer risk from a lifetime exposure to an agent.

### **Risk-Based Concentration, Carcinogens**

A concentration that corresponds to a  $10^{-6}$  incremental risk of an individual developing cancer over a lifetime as a result of inhalation exposure to the potential carcinogen. The inhalation cancer slope factor used in determining the concentration is chemical specific. However, a default value for the averaging time, residential exposure frequency and inhalation factor that has been age-adjusted, is used for determining the concentration.

Please see the attached page for the concentration equation with variable definitions and a sample calculation.

### **Risk-Based Concentration, Non-carcinogens**

A concentration that corresponds to a hazard index equal to 1, which is the level of inhalation exposure to a chemical below which it is unlikely for even sensitive populations to experience adverse health effects. The concentration is determined using default values for body weight, averaging time, residential exposure frequency, residential exposure duration, and inhalation rate. A chemical-specific inhalation reference dose is used in calculating the equation.

### **OSHA Permissible Exposure Limit (PEL)**

A time-weighted concentration that must not be exceeded during any 8-hour workshift of a 40-hour work week. The PEL is set by the Occupational Safety and Health Administration (OSHA) and is presented in the National Institute for Occupational Safety and Health (NIOSH) Pocket Guide.

# Inhalation Exposures to Carcinogenic Contaminants in Air:

$$C \text{ (ug/m}^3\text{)} = \frac{TR \times AT_c \times 1,000 \text{ ug/mg}}{EF_r \times InhF_{adj} \times CSF_i}$$

<u>Symbol</u>	<u>Definition (units)</u>	<u>Default</u>
C	Risk-Based Concentration for carcinogens	----
TR	Target cancer risk	10 <sup>-6</sup>
AT <sub>c</sub>	Averaging time – carcinogens (days)	25550
EF <sub>r</sub>	Exposure frequency – residential (d/y)	350
InhF <sub>adj</sub>	Inhalation factor ([m <sup>3</sup> -yr]/[kg-d])	11
CSF <sub>i</sub>	Cancer slope factor inhaled (mg/kg-d) <sup>-1</sup>	Specific

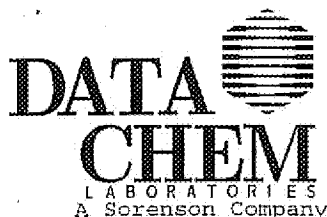
## Sample Calculation for Tetrachloroethylene:

$$CSF_i = 0.002 \text{ (mg/kg-d)}^{-1}$$

$$C \text{ (ug/m}^3\text{)} = \frac{10^{-6} \times 25550 \times 1,000 \text{ ug/mg}}{350 \times 11 \times 0.002} = 3.3 \text{ ug/m}^3$$



## **DataChem Laboratories Analytical Report**



COVER PAGE

DEC 26 2001

Form COVER-V1.3  
12260115280867  
Page 1ANALYTICAL REPORT FOR  
Workplace Safety & Health Co.  
Phone (317) 826-7892 Fax (317) 826-7892Workplace Safety & Health Co.  
Attention: Dick Griffith  
12038 Admirals Pointe Drive  
Indianapolis, IN 46236

DCL Report Group: 01I-2902-01

Date Printed: 26-DEC-01 15:28

Project Protocol #: UNKNOWN  
Client Ref Number: K01048  
Release Number: K01048

Analysis Method(s): DCL-SIM

<u>Client Sample Name</u>	<u>Laboratory Sample Name</u>	<u>Date Sampled</u>	<u>Date Received</u>
011210-01	01I20469	11-DEC-01	12-DEC-01
011210-02	01I20470	11-DEC-01	12-DEC-01
011210-03	01I20471	11-DEC-01	12-DEC-01
011210-04	01I20472	11-DEC-01	12-DEC-01
011210-05	01I20473	11-DEC-01	12-DEC-01
Method Blank	BL-191117-1	NA	NA
LCS	QC-191117-1	NA	NA
LCS Dup	QD-191117-1	NA	NA

  
Analyst: Thomas J. Masoian12/26/01  
Date  
Reviewer: Edmonda Shull12/26/01  
Date  
Lab Supervisor: Thomas J. Masoian12/26/01  
Date960 West LeVoy Drive / Salt Lake City, Utah 84123-2547  
Phone (801) 266-7700 Web Page: www.datachem.com  
FAX (801) 268-9992 E-mail: lab@datachem.com

AMMH002106



FORM H (TYPE I)  
SINGLE METHOD ANALYSES

Form RLIMS63H-V1.3  
12260115280867  
Page 2

SAMPLE GROUP COMMENTS



DCL Report Group...: 01I-2902-01  
Date Printed...: 26-DEC-01 15:28

Client Name...: Workplace Safety & Health Co.

Release Number...: K01048

Sample Group Comments

Analyzed by GC/MS according to modified method T015 for SIM.

PQL - Practical Quantitation Limit - Lowest standard that is detectable.

General Information

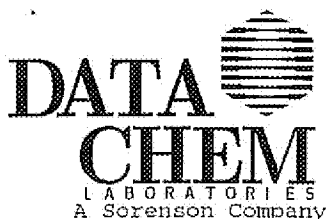
The DCL QC Database maintains all numerical figures which are input from the pertinent data source. These data have not been rounded to significant figures nor have they been moisture corrected. Reports generated from the system, however, list data which have been rounded to the number of significant figures requested by the client or deemed appropriate for the method. This may create minor discrepancies between data which appear on the QC Summary Forms (Forms B-G) and those that would be calculated from rounded analytical results. Additionally, if a moisture correction is performed, differences will be observed between the QC data and the surrogate data reported on Form A (or other report forms) and corresponding data reported on QC Summary Forms. In these cases, the Form A will indicate the "Report Basis" as well as the moisture value used for making the correction.  
Report generation options: BX

Result Symbol Definitions

ND - Not Detected above the MDL or IDL (LLD or MDC for radiochemistry).  
\*\* - No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

- U - Not Detected above the MDL or IDL (LLD or MDC for radiochemistry).  
For radiochemistry the nuclide was not identified by the Canberra Nuclear NID program, activity values reported are calculated using the Canberra Nuclear MINACT program.
- B - For organic analysis the qualifier indicates that this analyte was found in the method blank.  
For inorganic analysis the qualifier signifies the value is between the IDL and PQL.
- J - The qualifier indicates that the value is between the MDL and the PQL. It is also used for indicating an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.



FORM A (TYPE I)  
SINGLE METHOD ANALYSES

Form RLIMS63A-V1.3  
12260115280867  
Page 3

SAMPLE ANALYSIS DATA SHEET



Date Printed.....: 26-DEC-01 15:28

Client Sample Name: 011210-01

Client Name.....: Workplace Safety & Health Co.

DCL Sample Name...: 01I20469

Client Ref Number....: K01048

DCL Report Group...: 01I-2902-01

Sampling Site.....: Michigan Apts.

Matrix.....: AIR

Release Number.....: K01048

Date Sampled.....: 11-DEC-01 00:00

Date Received.....: 12-DEC-01 00:00

Reporting Units...: PPT v/v

Report Basis.....: ☒ As Received ☐ Dried

DCL Preparation Group: Not Applicable

DCL Analysis Group: G01CJ01F

Date Prepared.....: Not Applicable

Analysis Method...: DCL-SIM

Preparation Method...: Not Applicable

Instrument Type...: GC/MS VO

Aliquot Weight/Volume: 400 mL

Instrument ID.....: 5972-W

Net Weight/Volume....: Not Required

Column Type.....: DB-1

☒ Primary

☐ Confirmation

Analytical Results

Analyte	Date Analyzed	MDL	Result	Comment	Qual.	Dilution	PQL
cis-1,2-Dichloroethene	17-DEC-01 16:03		380			1	40
Tetrachloroethene	17-DEC-01 16:03		300			1	40
Trichloroethene	17-DEC-01 16:03		210			1	40
Vinyl Chloride	17-DEC-01 16:03		ND			1	40

Surrogate Recoveries

Analyte	Result	Spiked Amount	Percent Recovery
4-Bromofluorobenzene	481.	500.	96.1



FORM A (TYPE I)  
SINGLE METHOD ANALYSES

Form RLIMS63A-V1.3  
12260115280867  
Page 4

SAMPLE ANALYSIS DATA SHEET



Date Printed.....: 26-DEC-01 15:28

Client Name.....: Workplace Safety & Health Co.  
Client Ref Number....: K01048  
Sampling Site.....: Michigan Apts.  
Release Number.....: K01048

Date Received.....: 12-DEC-01 00:00

Client Sample Name: 011210-02  
DCL Sample Name....: 01I20470  
DCL Report Group...: 01I-2902-01  
  
Matrix.....: AIR  
Date Sampled.....: 11-DEC-01 00:00  
Reporting Units...: PPT v/v  
Report Basis.....: ☒ As Received ☐ Dried

DCL Preparation Group: Not Applicable  
Date Prepared.....: Not Applicable  
Preparation Method...: Not Applicable  
Aliquot Weight/Volume: 400 mL  
Net Weight/Volume....: Not Required

DCL Analysis Group: G01CJ01F  
Analysis Method....: DCL-SIM  
Instrument Type...: GC/MS VO  
Instrument ID.....: 5972-W  
Column Type.....: DB-1  
☒ Primary  
☐ Confirmation

Analytical Results

Analyte	Date Analyzed	MDL	Result	Comment	Qual.	Dilution	PQL
cis-1,2-Dichloroethene	17-DEC-01 16:42		280			1	40
Tetrachloroethene	17-DEC-01 16:42		260			1	40
Trichloroethene	17-DEC-01 16:42		160			1	40
Vinyl Chloride	17-DEC-01 16:42		33.		J	1	40

Surrogate Recoveries

Analyte	Result	Spiked Amount	Percent Recovery
4-Bromofluorobenzene	486.	500.	97.2



FORM A (TYPE I)  
SINGLE METHOD ANALYSES

Form RLIMS63A-V1.3  
12260115280867  
Page 5

SAMPLE ANALYSIS DATA SHEET



Date Printed.....: 26-DEC-01 15:28

Client Sample Name: 011210-03

Client Name.....: Workplace Safety & Health Co.

DCL Sample Name...: 01120471

Client Ref Number....: K01048

DCL Report Group...: 011-2902-01

Sampling Site.....: Michigan Apts.

Matrix.....: AIR

Release Number.....: K01048

Date Sampled.....: 11-DEC-01 00:00

Date Received.....: 12-DEC-01 00:00

Reporting Units...: PPT v/v

Report Basis.....: ☒ As Received ☐ Dried

DCL Preparation Group: Not Applicable

DCL Analysis Group: G01CJ01F

Date Prepared.....: Not Applicable

Analysis Method...: DCL-SIM

Preparation Method...: Not Applicable

Instrument Type...: GC/MS VO

Aliquot Weight/Volume: 400 mL

Instrument ID.....: 5972-W

Net Weight/Volume....: Not Required

Column Type.....: DB-1

☒ Primary

☐ Confirmation

Analytical Results

Analyte	Date Analyzed	MDL	Result	Comment	Qual.	Dilution	PQL
cis-1,2-Dichloroethene	17-DEC-01 17:22		300			3	40
Tetrachloroethene	17-DEC-01 17:22		270			3	40
Trichloroethene	17-DEC-01 17:22		200			3	40
Vinyl Chloride	17-DEC-01 17:22		42.			3	40

Surrogate Recoveries

Analyte	Result	Spiked Amount	Percent Recovery
4-Bromofluorobenzene	470.	500.	94.0



FORM A (TYPE I)  
SINGLE METHOD ANALYSES

Form RLIMS63A-V1.3  
12260115280867  
Page 6



SAMPLE ANALYSIS DATA SHEET

Date Printed.....: 26-DEC-01 15:28

Client Sample Name: 011210-04

Client Name.....: Workplace Safety & Health Co.

DCL Sample Name....: 01I20472

Client Ref Number....: K01048

DCL Report Group...: 01I-2902-01

Sampling Site.....: Michigan Apts.

Matrix.....: AIR

Release Number.....: K01048

Date Sampled.....: 11-DEC-01 00:00

Reporting Units....: PPT v/v

Date Received.....: 12-DEC-01 00:00

Report Basis.....: ☒ As Received ☐ Dried

DCL Preparation Group: Not Applicable

DCL Analysis Group: G01CJ01F

Date Prepared.....: Not Applicable

Analysis Method....: DCL-SIM

Preparation Method...: Not Applicable

Instrument Type....: GC/MS VO

Aliquot Weight/Volume: 400 mL

Instrument ID.....: 5972-W

Net Weight/Volume....: Not Required

Column Type.....: DB-1

☒ Primary

☐ Confirmation

Analytical Results

Analyte	Date Analyzed	MDL	Result	Comment	Qual.	Dilution	PQL
cis-1,2-Dichloroethene	17-DEC-01 18:01		350			1	40
Tetrachloroethene	17-DEC-01 18:01		420			1	40
Trichloroethene	17-DEC-01 18:01		230			1	40
Vinyl Chloride	17-DEC-01 18:01		42.			1	40

Surrogate Recoveries

Analyte	Result	Spiked Amount	Percent Recovery
4-Bromofluorobenzene	484.	500.	96.8



FORM A (TYPE I)  
SINGLE METHOD ANALYSES

Form RLIMS63A-V1.3  
12260115280867  
Page 7

SAMPLE ANALYSIS DATA SHEET



Date Printed.....: 26-DEC-01 15:28

Client Sample Name: 011210-05

Client Name.....: Workplace Safety & Health Co.

DCL Sample Name....: 01120473

Client Ref Number....: K01048

DCL Report Group...: 011-2902-01

Sampling Site.....: Michigan Apts.

Matrix.....: AIR

Release Number.....: K01048

Date Sampled.....: 11-DEC-01 00:00

Date Received.....: 12-DEC-01 00:00

Reporting Units....: PPT v/v

Report Basis.....: ☒ As Received ☐ Dried

DCL Preparation Group: Not Applicable

DCL Analysis Group: G01CJ01F

Date Prepared.....: Not Applicable

Analysis Method....: DCL-SIM

Preparation Method...: Not Applicable

Instrument Type....: GC/MS VO

Aliquot Weight/Volume: 400 mL

Instrument ID.....: 5972-W

Net Weight/Volume....: Not Required

Column Type.....: DB-1

☒ Primary

☐ Confirmation

Analytical Results

Analyte	Date Analyzed	MDL	Result	Comment	Qual.	Dilution	PQL
cis-1,2-Dichloroethene	17-DEC-01 18:38		510			1	40
Tetrachloroethene	17-DEC-01 18:38		390			1	40
Trichloroethene	17-DEC-01 18:38		320			1	40
Vinyl Chloride	17-DEC-01 18:38		62.			1	40

Surrogate Recoveries

Analyte	Result	Spiked Amount	Percent Recovery
4-Bromofluorobenzene	516.	500.	103.





FORM A (TYPE I)  
SINGLE METHOD ANALYSES

Form RLIMS63A-V1.3  
12260116040839  
Page 8

SAMPLE ANALYSIS DATA SHEET



Date Printed.....: 26-DEC-01 16:04

Client Name.....: Workplace Safety & Health Co.  
Client Ref Number.....: K01048  
Sampling Site.....: Not Applicable  
Release Number.....: K01048

Date Received.....: Not Applicable

Client Sample Name: BL-191117-1  
DCL Sample Name....: BL-191117-1  
DCL Report Group...: 01I-2860-01

Matrix.....: SUMMA  
Date Sampled.....: Not Applicable  
Reporting Units...: PPT V/V

DCL Preparation Group: Not Applicable  
Date Prepared.....: Not Applicable  
Preparation Method...: Not Applicable  
Aliquot Weight/Volume: 400 mL  
Net Weight/Volume....: Not Required

DCL Analysis Group: G01CJ01F  
Analysis Method....: TO-15(SIM)  
Instrument Type....: GC/MS VO  
Instrument ID.....: 5972-W  
Column Type.....: DB-1

☒ Primary  
☐ Confirmation

Analytical Results

Analyte	Date Analyzed	MDL	Result	Comment	Qual.	Dilution	PQL
Benzene	17-DEC-01 11:30		ND			1	40
1,1-Dichloroethene	17-DEC-01 11:30		ND			1	40
cis-1,2-Dichloroethene	17-DEC-01 11:30		ND			1	40
trans-1,2-Dichloroethene	17-DEC-01 11:30		ND			1	40
Ethylbenzene	17-DEC-01 11:30		ND			1	40
Tetrachloroethene	17-DEC-01 11:30		ND			1	40
Toluene	17-DEC-01 11:30		ND			1	40
1,1,1-Trichloroethane	17-DEC-01 11:30		ND			1	40
Trichloroethene	17-DEC-01 11:30		ND			1	40
Vinyl Chloride	17-DEC-01 11:30		ND			1	40
m,p-Xylene	17-DEC-01 11:30		ND			1	40
o-Xylene	17-DEC-01 11:30		ND			1	40

Surrogate Recoveries

Analyte	Result	Spiked Amount	Percent Recovery
4-Bromofluorobenzene	456.	500.	91.2



FORM A (TYPE I)  
SINGLE METHOD ANALYSES

Form RLIMS63A-V1.3  
12260116040839  
Page 9

SAMPLE ANALYSIS DATA SHEET



Date Printed.....: 26-DEC-01 16:04

Client Name.....: Workplace Safety & Health Co.  
Client Ref Number.....: K01048  
Sampling Site.....: Not Applicable  
Release Number.....: K01048

Date Received.....: Not Applicable

Client Sample Name: QC-191117-1  
DCL Sample Name....: QC-191117-1  
DCL Report Group...: 01I-2860-01  
Matrix.....: SUMMA  
Date Sampled.....: Not Applicable  
Reporting Units....: PPT V/V

DCL Preparation Group: Not Applicable  
Date Prepared.....: Not Applicable  
Preparation Method...: Not Applicable  
Aliquot Weight/Volume: 400 mL  
Net Weight/Volume....: Not Required

DCL Analysis Group: G01CJ01F  
Analysis Method....: TO-15(SIM)  
Instrument Type....: GC/MS VO  
Instrument ID.....: 5972-W  
Column Type.....: DB-1  
☒ Primary  
☐ Confirmation

Analytical Results

Analyte	Date Analyzed	MDL	Result	Comment	Qual.	Dilution	PQL
cis-1,2-Dichloroethene	17-DEC-01 09:49		200			1	40
Tetrachloroethene	17-DEC-01 09:49		200			1	40
Vinyl Chloride	17-DEC-01 09:49		200			1	40

Surrogate Recoveries

Analyte	Result	Spiked Amount	Percent Recovery
4-Bromofluorobenzene	489.	500.	97.8



FORM A (TYPE I)  
SINGLE METHOD ANALYSES

Form RLIMS63A-V1.3  
12260115582365  
Page 10

SAMPLE ANALYSIS DATA SHEET



Date Printed.....: 26-DEC-01 15:58

Client Sample Name: QD-191117-1

Client Name.....: Workplace Safety & Health Co.

DCL Sample Name....: QD-191117-1

Client Ref Number....: K01048

DCL Report Group...: 01I-2860-01

Sampling Site.....: Not Applicable

Matrix.....: SUMMA

Release Number.....: K01048

Date Sampled.....: Not Applicable

Reporting Units....: PPT V/V

Date Received.....: Not Applicable

DCL Preparation Group: Not Applicable

DCL Analysis Group: G01CJ01F

Date Prepared.....: Not Applicable

Analysis Method....: TO-15 (SIM)

Preparation Method...: Not Applicable

Instrument Type....: GC/MS VO

Aliquot Weight/Volume: 400 mL

Instrument ID.....: 5972-W

Net Weight/Volume....: Not Required

Column Type.....: DB-1

☒ Primary

☐ Confirmation

Analytical Results

Analyte	Date Analyzed	MDL	Result	Comment	Qual.	Dilution	PQL
cis-1,2-Dichloroethene	17-DEC-01 10:23		200			1	40
Tetrachloroethene	17-DEC-01 10:23		230			1	40
Vinyl Chloride	17-DEC-01 10:23		210			1	40

Surrogate Recoveries

Analyte	Result	Spiked Amount	Percent Recovery
4-Bromofluorobenzene	505.	500.	101.

## ANALYTICAL REQUEST FORM

1. ☒ REGULAR Status

05-2902-81

☐ RUSH Status Requested - ADDITIONAL CHARGE  
RESULTS REQUIRED BY \_\_\_\_\_

DATE

CONTACT DATACHEM LABS PRIOR TO SENDING SAMPLES

2. Date 12/11/01 Purchase Order No. K01048  
3. Company Name Workplace Safety & Health Co.  
Address 12038 Admirals Pointe Dr.  
Indianapolis, IN 46236  
Person to Contact Dick Griffith  
Telephone (317) 826-7892  
Fax Telephone (317) 826-7892  
E-mail Address vgriffith78@cs.com  
Billing Address (if different from above) \_\_\_\_\_

4. Quote No. \_\_\_\_\_  
DCL Project Manager \_\_\_\_\_  
5. Sample Collection  
Sampling Site Michigan Apts.  
Industrial Process \_\_\_\_\_  
Date of Collection 12/11/01  
Time Collected 9:15 AM  
Date of Shipment 12/11/01  
Chain of Custody No. \_\_\_\_\_

### 6. REQUEST FOR ANALYSES

Laboratory Use Only	Client Sample Number	Matrix*	Sample Volume	ANALYSES REQUESTED - Use method number if known	Units**
05-20469	011210-01	Summa Can		Cis-1,2-Dichloroethylene, Tetrachloroethylene	
70	011210-02			Trichloroethylene, Vinyl chloride	
71	011210-03				
72	011210-04				
73	011210-05			all 5 samples for these 4 analytes	

\* Specify: Solid sorbent tube, e.g. Charcoal; Filter type; Impinger solution; Bulk sample; Blood; Urine; Tissue; Soil; Water; Other

\*\* 1. mg/sample 2. mg/m<sup>3</sup> 3. ppm 4. % 5. \_\_\_\_\_ (other) Please indicate one or more units in the column entitled Units\*\*

Comments \_\_\_\_\_

Possible Contamination and/or Chemical Hazards \_\_\_\_\_

### 7. Chain of Custody (Optional)

Relinquished by	<u>[Signature]</u>	Date/Time	<u>12/11/01 - 10:26 AM</u>
Received by	<u>Rand Polt</u>	Date/Time	<u>12/12/01 10:30</u>
Relinquished by	<u>Rand Polt</u>	Date/Time	_____
Received by	_____	Date/Time	_____
Relinquished by	_____	Date/Time	_____
Received by	_____	Date/Time	_____

Table 2  
Inhalation Exposure Parameters and Concentration Limits  
Michigan Meadows Apartments  
Indianapolis, Indiana  
MUNDELL Job No.: M01046

Chemical Name	Carcinogen Classification <sup>a</sup>	Inhalation Reference Dose, RfD <sup>b</sup> (mg/kg-d)	Inhalation Cancer Slope Factor <sup>c</sup> (mg/kg/d) <sup>-1</sup>	Life-Time Risk-Based Concentration, <sup>d</sup> Carcinogens (ug/m <sup>3</sup> )	Site-Specific Risk-Based Concentration, <sup>e</sup> Carcinogens (ug/m <sup>3</sup> )	Life-Time Risk-Based Concentration <sup>d</sup> Non-Carcinogens (ug/m <sup>3</sup> )	Site-Specific Risk-Based Concentration <sup>e</sup> Non-Carcinogens (ug/m <sup>3</sup> )	OSHA <sup>f</sup> Permissible Exposure Limit <sup>g</sup> (mg/m <sup>3</sup> )
cis-1,2-Dichloroethylene (cis-1,2-DCE)	D	0.01	NA	NA	NA	37	70	NA
Tetrachloroethylene (PCE)	B/C	0.14	0.002	3.3	6.2	NA	NA	678
Trichloroethylene (TCE)	B/C	0.006	0.006	1.1	2.1	NA	NA	537
Vinyl Chloride	A	0.028	0.015	0.22	0.42	NA	NA	2.6

<sup>a</sup>Integrated Risk Information System (RISC), U.S. Environmental Protection Agency (EPA)

<sup>b</sup>RISC Technical Guide, Indiana Department of Environmental Management (IDEM)

<sup>c</sup>EPA Region 3 Risk-Based Concentration Table

<sup>d</sup>EPA Region 6: Human Health Medium-Specific Screening Levels

<sup>e</sup>EPA Region 6: Human Health Medium-Specific Screening Levels, adjusted for Site-Specific averaging exposure time of 37 years (1965 to 2002).

<sup>f</sup>As reported in the NIOSH Pocket Guide to Chemical Hazards, 1997

<sup>g</sup>Time-weighted average, normal exposure for 8 hour workday or 40 hour workweek

A = Human Carcinogen

B = Probable human carcinogen

C = Possible human carcinogen

D = Not classifiable as to human carcinogenicity

NA - Not Applicable